

In this Issue

1. Building Energy Use and Control Systems: Defining the Connection
 2. Benchmarking a Portfolio of Buildings
 3. Upcoming Events
 4. Benchmarking Tips
 5. Website We Like
 6. Conferences and Events
 7. Help Us Build a Better Newsletter
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1. Building Energy Use and Control Systems: Defining the Connection

In our previous newsletters, we shared findings from “An Evaluation of America’s First ENERGY STAR Buildings: The Class of 1999” indicating the importance of optimum use of automated energy controls to achieve top energy performance in buildings. We also provided links to resources on how to optimize automated control system performance. In this issue, we dig deeper into the impact of control systems on building energy performance by highlighting the National Building Controls Information Program’s (NBCIP) “Building Energy Use and Control Problems: Defining the Connection” study. This study looks specifically at which aspects of automated control systems contribute most to energy waste in buildings through improper use. In looking at 67 case studies of more than 110 buildings, NBCIP analyses determined that 35% of control problems were software related; 32% were hardware related; 21% were human factor related; and 12% were unspecified.

The analyses also estimated \$4 million in savings through improved Operations & Maintenance (O&M), of which 77% could be obtained through correcting control problems.

We encourage you to read the final analysis on-line, which provides helpful examples of hardware, software, and human-related problems that have lead to inefficient use of controls and that could be targeted to improve building energy performance at low cost and low risk.
http://www.buildingcontrols.org/download/untracked/NBCIP_02_011.pdf

The National Building Controls Information Program (NBCIP) website is
<http://www.buildingcontrols.org/publications.php>.

2. Benchmarking a Portfolio of Buildings

The US EPA benchmarking tool has become a valuable resource for building owners, managers, and energy management companies who need to understand how their building’s performance compares to similar buildings. This can indicate the presence of hidden problems in the way the building is operating. Other times, a high score will be evidence that careful management is paying off in superior energy efficiency. In either case, the benchmarking tool is providing useful information in the form of a comparative energy-efficiency score.

Savvy users of the tool have found ways to use the benchmark across a portfolio of buildings, either a portfolio operated by a property management firm, owned by a large corporation, or part

of a school district or other regional organization. For these users, the benchmark score allows a number of management approaches and decisions that are difficult without this comparative view:

- Benchmarking all the buildings in a portfolio allows the owner or manager to see which buildings have the lowest scores. These generally offer the best opportunities for saving costs and may be the first projects undertaken in a portfolio-wide energy efficiency program.
- Conversely, the highest scoring buildings may have either exemplary management approaches, offering lessons learned for the entire portfolio, or may have comfort issues that may require additional energy to correct.
- It is also possible for Portfolio owners and managers to calculate an average benchmark score and use this number to monitor the overall efficiency of the portfolio over time and set goals.

These types of portfolio-wide management approaches can best be supported by a benchmark that is accounting for weather, climate, and building characteristics. The end result is more informed building management and the ability of those who manage portfolios of buildings to make better decisions for individual buildings in their portfolios.

3. Upcoming Events

eeBuildings' May event in Shanghai, China has been re-scheduled for Fall 2003.

Write to eeBuildings@epa.gov if you would like to take part in this event or meet with us while we are in Shanghai.

4. Benchmarking Tips

What to do if Your Benchmarking Score Seems Too High or Too Low

There are a few data inputs you can double-check before moving on to ensure an accurate, useful score.

- Have all meters been accounted for?
- Are the units of energy correct?
- Is the floor area correct?
- Are the space uses correctly documented?
- Is there a missing month of data?
- Were there any special circumstances that explain high or low energy use (like a remodeling project)?

Log on to the US EPA Benchmarking Tool at
http://estar3.energystar.gov/pls/portfolio/Pm_Main.Login

Do you have a question about using the US EPA Benchmarking Tool? Send your question to eeBuildings@epa.gov and we will answer your question directly and/or address it in the next newsletter.

5. Websites We Like

CADDET Energy Efficiency website

CADDET stands for Centre for Analysis and Dissemination of Demonstrated Energy Technologies. It is an international information network that helps managers, engineers, architects and researchers find out about renewable energy and energy-saving technologies that have worked in other countries.

CADDET's Website includes two searchable databases: one of over 500 demonstration projects, and another of a full range of Technical Brochures (4 page documents available in PDF format). Search criterion includes country, keyword, technology, and sector. The searches are quick, easy, and free to use.

<http://www.caddet-ee.org/index.php>

6. Conference Notes

Woodrow Wilson Center's China Environment Forum Event: Air Pollution Challenges in Rural China, April 23, 2003, Washington, D.C.

The China Environment Forum regularly brings together experts with diverse backgrounds and affiliations—including specialists from several key U.S. government agencies and from the fields of energy, China studies, U.S. foreign policy, economics and trade, environment, and rural development. Through monthly meetings, the China Environment Forum aims to identify the most important environmental and sustainable development issues in China and explore creative ideas and opportunities for governmental and nongovernmental cooperation.

eeBuildings attended the China Environment Forum Event on April 23, 2003. Featured speakers were Jonathan Sinton of Lawrence Berkeley National Laboratory and Robert P. Weller of Boston University. This and other event summaries can be found at www.wilsoncenter.org/cef by clicking on the Event Summaries link.

National Conference on Building Commissioning, Palm Springs, California

eeBuildings staff attended the National Conference on Building Commissioning May 20 through 22. As discussed in previous editions of this newsletter, commissioning refers to measures to repair and adjust heating, ventilating and air conditioning systems so that buildings operate as intended by their designers. Often these are low cost measures that can produce energy savings of 10 – 40%, as well as improve indoor air quality. A speaker from the American Council for an Energy Efficient Economy (ACEEE) reported that building commissioning is the most cost-effective opportunity to achieve major energy savings in buildings. In one session, Walt Disney Corporation reported a 43% savings in energy costs from just buildings “tune ups”. How are these savings achieved: by getting buildings engineers to think holistically, take responsibility for energy costs, and finally make sure their BAS system are being fully utilized.

7. Help us Build a Better Newsletter

- We'd like to hear about your progress. If you have had successful experiences improving the energy efficiency of your buildings outside the U.S., please let us know at eeBuildings@epa.gov.

- If you have suggestions for how to improve the content of this newsletter, please send them to eeBuildings@epa.gov.

To learn more about eeBuildings, visit <http://www.epa.gov/eeBuildings> or e-mail eeBuildings@epa.gov.

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The U.S. Environmental Protection Agency's eeBuildings (energy-efficient Buildings) program helps international building owners, managers, and tenants improve the energy performance of their buildings. Drawing on the expertise of ENERGY STAR, eeBuildings connects financial and environmental performance to energy efficiency.

This newsletter is produced and edited by ICF Consulting. ICF supports EPA's eeBuildings and ENERGY STAR activities.